REMARKS

Claims 1 to 7, 9 and 12 to 23 are in this application and are presented for further consideration.

The title has been objected to as not being descriptive. Applicant now proposes a new title. Approval of the new title is requested.

Claims 5 and 17 have been objected with the Examiner noting informalities. Applicant has now made corrections to address the issues in these claims.

Claims 10 and 11 have been objected to. These claims have now been canceled.

Claims 4 and 16 have been amended to address the issues with regard to substantial duplicate claims.

Claims 3 - 6, 10, 15 - 18 have been rejected as being indefinite. Applicant has now revised the claims to address these issues.

Applicant wishes to thank the Examiner for the helpful comments with regard to all of the formal issues and the claims. It is Applicant's position that based on the amendments made by this response, all formal issues have now been addressed.

Claims 1, 7 - 8, 12 - 13 and 19 have been rejected as being anticipated by Iwasa et al. (U.S. 6,144,685). Claims 1 - 2, 12 - 14 have been rejected as being anticipated by Akatsu (U.S. 5,914,800).

It is Applicant's position that the prior art references fail to teach all of the features of the invention. Accordingly, Applicant requests that the Examiner reconsider the rejections.

Applicant has amended the main claims and has added new claim 21. The nature of the

amendments and changes and the new claim are meant to highlight the important combination of the features which are not suggested by the invention. A primary difference between the prior art and the invention is the system and method of the invention provide that the laser light is focused to a desired location on the printing form. This is somewhat different from references such as Iwasa in which a mirror structure is used to provide a focusing of the light (there is not a focusing by the lens structures on the form).

The invention as claimed relates to a lens system for a laser for illuminating and printing form as shown for example in Fig. 1 of the present application. According to one feature of the invention a spherical lens 2 is arranged between the laser and the printing form to be illustrated to focus the laser light emitted by the laser 1. Furthermore, an aspherical lens is arranged between the spherical lens and the printing form to focus the laser light into a desired spot or region on the printing form. The laser light which is emitted by an edge-emitting or surface-emitting laser can be focused by a ground spherical lens of a high surface quality without obtaining an error in the illustration due to surface inaccuracies. Such an illustration error directly after the emission of the laser would lead to a great inaccuracy on the printing form to be illustrated. An aspherical lens arranged after the spherical lens in the direction of the ray of the laser light is usually prepared by pressing or forming. Unlike the spherical lens such an aspherical lens cannot be ground. Accordingly, even though an aspherical lens has a lower surface quality the aspherical lens can be manufactured with greater accuracy concerning the desired curvature as compared to a spherical lens. As such the aspherical lens provides very good focusing of the laser light which has already been focused by the spherical lens. This is

due to the aspherical lens providing the curvature that can be prepared with high precision. Errors on the surface of the aspherical lens have hardly any effect on the quality of the imaging. This is due to the fact that the inaccuracies are imaged, unlike in the case of the spherical lens, only diffusely with an extremely low power. This leads qualitatively to a hardly noticeable impairment of the imaging.

In summary, laser light can be focused with precision according to the present invention with a spherical lens because of the high surface quality of the spherical lens. Essentially only spherical aberrations of the spherical lens are corrected. Surfaces of the aspherical lens lead to a barely noticeable loss of quality of the imaging.

The prior-art reference Iwasa teaches exclusively the use of a two-dimensional surface-emitting laser array in conjunction with a laser beam scanner. This is a teaching which is contrary to the present invention.

Iwasa contains no reference to the special use of (one-dimensional), edge-emitting laser in conjunction with an illustrating device with cylindrical lenses, as according to the present invention. The use of an illustrating device with cylindrical lenses and edge-emitting lasers has the advantage that an essentially one-dimensional object can be imaged.

Furthermore, the term "strip" as used in the claims designates a geometric shape in which one dimension is very small and can therefore be substantially ignored as a dimension. The laser of the invention with a strip-shaped, one-dimensional laser, exposes a two-dimensional image by the image surface being displaced at right angles to the direction of the

"strip," while the laser or lasers is/are switched on.

The lens system according to the amended claim 1 for focusing or converging laser light on a printing form is consequently not anticipated by the Iwasa document. The teaching from the Iwasa document for the person of ordinary skill in the art is only the use of a lens system with two-dimensionally emitting laser arrays. However, the advantages of the invention, namely, the precise focusing and/or convergence onto a printing form cannot be achieved with the optical lens system (21, 22) according to Iwasa.

The person of ordinary skill in the art is likewise provided with no teaching or suggestion in the prior-art reference Iwasa to provide the process according to the original claims 12 through 20, according to which the area elements of a printing form are exposed by sweeping with a "strip" (L in Figure 7). While the present invention contains a lens system with spherical and aspherical lenses in the vertical direction to the area elements (4) that can be illustrated, which lens system is movable in relation to the printing form, Iwasa teaches the person skilled in the art that the laser beam can be directed in a first, vertical direction with a spherical lens and in a second, horizontal direction with an aspherical lens. The "strip" L according to the present invention consequently has a considerably smaller height H than the area element (4) to be exposed, as is shown in Figure 7 of the specification. Iwasa does not suggest this process.

Akatsu discloses single optical system for exposing a drum of a laser printer with a plurality of laser beams, wherein rotating mirrors and an aspherical lens (column 2, line 24) is used. This is not like the system as defined in claim 1 of the present invention.

Contrary to the teachings of Akatsu, the present invention as claimed includes a lens system in which aspherical lenses corrects spherical aberrations of the spherical lense. This is without a mirror. The claim calls for the focusing or converging to be on the printing form. This is not suggested by Akatsu.

The person of ordinary skill in the art is not provided with a teaching or suggestion according in Akatsu to provide the combination of the present invention according to the new device claim 1 and the original process claim 12. The Iwasa and Akatsu references fail to teach or suggest the invention either individually or in their combination.

Applicant requests that the Examiner consider references which have come to Applicant's attention from the German Examination Proceedings.

- U.S. 5,990,925 discloses a diode pump system and method for producing image spots of constant size. A series of lenses 77, 79 concentrate the output of a laser 60 onto the end face 85 of a crystal 75.

- Canadian Publication 2,260,565 discloses a method for combining the output of a laser diode array into a single telecentric stripe. This structure is based on the laser diode array in combination with a lens array.

- EP 0 992 350 discloses a method and apparatus for light modulation and exposure at high levels with high resolution. The reference uses a mirror for sweeping a zone.

- U.S. 5,978,010 discloses a printing plate exposure apparatus for recording image data spirally.

Consideration of the references is requested.

The prior art as a whole fails to suggest the imaging of a laser on a printing form by using a spherical and an aspherical lens to focus or converge the light on the printing form, particularly as a strip. Iwasa's teaching of a laser ray surface presents a different direction of the person of ordinary skill in the art. The use of mirrors and the like for conditioning the laser as according to Akatsu also presents a different direction to the person of ordinary skill in the art. The prior art as a whole fails to provide a teaching or suggestion which would direct the person of ordinary skill in the art to depart from the past known structures and instead provide the combination as claimed. The prior art fails to direct the person of ordinary skill in the art toward the process as claimed.

Accordingly, Applicant respectfully requests that the Examiner reconsider the rejections in view of the revised claims and in view of the discussion above.

Respectfully submitted
for Applicant,

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